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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,164	11/13/2001	Adrian P. Sparks	Q67243	6469
116	7590	10/06/2004	EXAMINER	
PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108			SINGH, DALZID E	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

KS

Office Action Summary	Application No. 09/987,164	Applicant(s) SPARKS ET AL.	
	Examiner Dalzid Singh	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 16-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/26/02; 8/5/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 9-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Fee (US Patent No. 6,108,113).

Regarding claim 1, Fee discloses a system for hybrid electronic/photonic switching of traffic in a node of a communications network (as shown in Figs. 3B, 3C and 3D), the system comprising:

a plurality of interfaces (such as plurality of LTE TX) adapted to translate respective traffic streams between corresponding electronic and optical signals (the LTE (TX) translates electrical signal from electrical digital cross-connect switch (DCS) (310) to optical signal going into fiber (330, 332 or 334); see col. 3, lines 3, lines 46-52);

an electronic cross-connect (EXC) or (electronic DCS) adapted to selectively map an electronic signal through a selected one of the interfaces (as shown in Figs. 3B, 3C and 3D, Fee shown that the electronic DCS (310) selectively map an electrical signal between normal condition and fault condition; see col. 2, lines 19-24 and col. 34-38; for example, if the electronic switch (DCS) selects or maps a connection to fiber (P), then the electrical signal is selected or mapped to interface (LTE (TX)) corresponding to fiber (P)); and

a photonic cross-connect (PXC) or optical crossconnect (OCCS) adapted to selectively couple an optical signal between the selected interface and a selected one of at least two optical channels of the communications network (as shown in Fig. 3D, optical signal between the selected interface (for example, the selected interface (LTE (TX)) corresponding to fiber (P)) is selectively coupled to one of at least two optical channels (optical channels such as W1 or W2 or P, located on fiber span between site B and C; see col. 3, lines 65-67 to col. 1-2, Fee discloses that the optical switch selectively forms optical connections among various input and output ports).

Regarding claim 2, as shown in Figs. 3B, 3C and 3D, Fee shows that the plurality of interfaces (LTE (TX)) comprises at least one working interface and at least one protection interface (as shown in the figures, Fee shows plurality of interfaces such as working interface (LTE (TX)) corresponding to working fiber (W1) and protection interface (LTE (TX)) corresponding to protection fiber (P)).

Regarding claim 3, as shown in the figures, Fee shows that a number of working interfaces corresponds with a number of working channels of the communications network (for example, as shown in the Figs. 3B, 3C and 3D, on site A, there are shown working interfaces (LTE (TX)) corresponding to working fibers (W1) and (W2) and protection interface (LTE (TX)) corresponding to protection fiber (P)).

Regarding claim 4, as discussed above, each working interface is adapted to translate between an electronic signal and a corresponding optical signal having a substantially fixed predetermined wavelength (for example, working interface (LTE (TX)) is coupled to optical fiber working fiber (W1) and to the DCS which is outputs electrical

signal; see col. 2, lines 4-15, Fee discussed that the interface (LTE) transmit optical signal).

Regarding claim 9, Fee discloses that a number of protection interfaces is selected based on a probability of failure of a working interface (in col. 2, lines 19-24 lines 34-38 and col. 3, lines 65-67 to col. 4, lines 1-5 and lines 28-37; Fee discloses that under normal conditions, where there is no failure, the electrical switch (DCS) and optical switch (OCCS) selectively selects working fiber and in case of failure the switches is able to select protection fiber; as shown in Figs. 3B, 3C and 3D, each fiber corresponds to a particular interface (LTE (TX)), therefore when a protection fiber (P) is selected the interface corresponding to that fiber is also selected).

Regarding claim 10, Fee discloses that the protection interface is adapted to translate between an electronic signal and a corresponding optical signal having a selected wavelength (as shown in Figs. 3B, 3C and 3D, the interface (LTE (TX)), corresponding to working (W1, W2) fibers and protection fiber (P), translates electrical signal from electronic switch (DCS) to optical signal for optical switch (OCCS); see col. 3, lines 43-52; since the electrical signal is converted to optical signal, therefore the optical signal must be at a particular wavelength; in col. 12, lines 5-6, Fee discloses the WDM system comprises of possible 512 wavelengths, therefore there must at least one particular wavelength selected for transmission of data signal; see Figs. 4A, 4B, 5, 6A, 6B and 9, where Fee shows laser diode (LD) to transmit a particular wavelength).

Regarding claim 11, Fee discloses that the selected wavelength is dynamically selected from a set of channel wavelengths of the network (in col. 13, lines 47-50, Fee

discloses that the signal is rerouted or mapped to other spare or pre-emptible wavelength in the event of failure; therefore the wavelength is dynamically selected from a set of channels wavelength)

Regarding claim 12, as discussed above, Fee shows that the protection interface comprises either one or both of:

a wide-band optical detector adapted to detect an optical signal having a wavelength corresponding to any channel wavelength of the network (since the claim requires either one or both, this limitation is not considered); and

a laser adapted to generate an optical signal having the selected wavelength (see col. 2, lines 6-9, Fee discloses that the LTE comprises of semiconductor laser; as shown in Figs. 3B, 3C and 3D, there are plurality of interfaces (LTE (TX)); the protection interface (LTE (TX)), which correspond to the protection fiber (P) comprises of semiconductor laser to emit optical signal).

Regarding claim 15, Fee discloses that a control system adapted to control operation of the plurality of interfaces (LTE (TX)), the EXC (DCS) (210) and the PXC or OCCS (see col. 3, lines 54-58).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (US Patent No. 6,108,113).

Regarding claim 5, Fee discloses transmitting a predetermined wavelength as discussed above and differs from the claimed invention in that Fee does not disclose that the predetermined wavelength is determined during provisioning of the interface in accordance with a design of the communications network. However, the network system, as discussed above, was design to communicate with various different sites through plurality of transmission links. Therefore, it would have been obvious to an artisan of ordinary skill at the time the invention was made to determine the wavelength during provision of the interface. One of ordinary skill in the art would have been motivated to do such in order to set a particular wavelength to a particular destination or fiber.

Regarding claim 6, as discussed above, Fee discloses that the predetermined wavelength corresponds with a channel wavelength of at least one working channel of the network (in col. 13, lines 47-50, Fee discloses routing of wavelength, therefore, it would have been obvious that initially there is a predetermined wavelength corresponds with a channel wavelength of at least one working channel before the routing of the wavelength channel).

5. Claims 7, 8, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (US Patent No. 6,108,113) in view of Yin et al (US Patent no. 6,246,707).

Regarding claim 7, as discussed above and shown in Fig. 4A, Fee shows laser diode for generating an optical signal having the predetermined wavelength and differ from the claimed invention in that Fee does not specifically disclose that the laser is a narrow-band laser. However, laser diode which generate narrow band optical signal is well known. Yin et al is cited to show such well known concept. In col. 2, lines 64-67, Yin et al teach the use of laser which generate narrow band signal. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a laser which generate narrow band (i.e., narrow band laser) to the system of Fee as taught by Yin et al. One of ordinary skill in the art would have been motivated to do such in order to provide high conversion efficiency at high repetition rate and hence provide greater bandwidth.

Regarding claim 8 and 14, as discussed above and shown in Fig. 4A, Fee shows laser diode for generating an optical signal having the predetermined wavelength and differ from the claimed invention in that Fee does not specifically disclose that the laser is a tunable laser. However, tunable laser diode is well known. Yin et al is cited to show such well known concept. In col. 2, lines 64-65, Yin et al teach the use of tunable laser. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a tunable laser to the system of Fee as taught by Yin et al. One of ordinary skill in the art would have been motivated to do such in order to provide tune the laser to a desired wavelength.

Regarding claim 13, as discussed above and shown in Fig. 4A, Fee shows laser diode for generating an optical signal having the selected wavelength and differ from the

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claimed invention in that Fee does not specifically disclose that the laser is a narrow-band laser. However, laser diode which generate narrow band optical signal is well known. Yin et al is cited to show such well known concept. In col. 2, lines 64-67, Yin et al teach the use of laser which generate narrow band signal. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a laser which generate narrow band (i.e., narrow band laser) to the system of Fee as taught by Yin et al. One of ordinary skill in the art would have been motivated to do such in order to provide high conversion efficiency at high repetition rate and hence provide greater bandwidth.

Allowable Subject Matter

6. Claims 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Liu (US Patent No. 5,914,798) is cited to show restoration systems for an optical telecommunication network.

Kuroyanagi et al (US Patent No. 6,072,610) is cited to show optical transmission system.

Fang et al (US Patent No. 6,771,849) is cited to show optical fiber protection switch.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272--3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
October 1, 2004

Dalzid Singh